"Always Fair Weather In Stratosphere" Contradicted by Tomlinson

THE AIR LINE PILOT

"POP" MAYO SAYS CHANGE CONSTRUCTION OF PLANES

POST OFFICE FIGURES PAY MILEAGE ON REGULAR COURSE

Vol. 7—No. 1 | Published by The Air Line Pilots Association, International, 3145 W. 63rd St., Chicago, Ill. | January, 1938

UNIVERSITY OF LOUISVILLE FEB 14 1938

Washington-Hoover Airport Described As "Public Menace and National Disgrace"

Rep. Plumley Attacks Bureau

Failure to Act on Pilots' Petition Called "Near Criminal Negligence"

"Near criminal negligence" are the words used by Representative Plumley (Republican of Vermont) to describe the Bureau's passive attitude to a petition of the air line pilots, asking for the transfer of operations from the "admittedly" dangerous Washington-Hoover Airport to Bolling Field.

Congressman Plumley asked: "How long are these pilots going to be compelled to endanger their lives and our own?

Pilots Know Situation

"We are going to wake up some morning to learn that one of the greatest air catastrophes in the annals of aerial navigation has occurred right here in the Capital. I call it about as near criminal negligence as anything of the kind could be, not to do something in response to the petition of the men who, above all others, know what the situation is and what ought to be done."

The legislator described the Washington-Hoover Airport as "both a public menace and a national disgrace."

The Camp Springs Airport bill, recommended by the Washington Airport Commission, is on the House calendar, and it is hoped will be voted on early this session.

WHY AIR BUREAU ORDERED *Dump Valves Sealed*

As a result of a Bureau of Air Commerce notice, dated October 4, 1937, all fuel dump valves on aircraft so equipped were made inoperative. ALPA Headquarters received numerous complaints from members who felt that sealed dump valves created a dangerous condition especially in view of present-day high wing loadings and the fact that an emergency might arise at any time necessitating immediate opening of these valves.

The Association wrote the Bureau of Air Commerce for the reason these valves were closed and why they have remained so.

Bureau Makes Fire Hazard Tests

Mr. B. M. Jacobs, Chief, Certificate and Inspection Division, replied with the following explanation: "Several of the recent designs of dump valves were such as to create a suspicion that fuel released in the air would entail a fire hazard and as a result the Bureau required tests to be made first with a non-inflammable fluid and motion pictures were made to determine the pattern of the fuel dispersion. From the information obtained through this source the operators and the manufacturer were unwilling to continue the tests until certain changes had been made in the installation of the dump valves. The corrective measures taken in this instance were lead-away lines from the dump valve carrying the fuel to a point a considerable distance from the exhaust stacks.

"As a result of our experience the order of October 4, 1937, requiring the fuel dump valves on aircraft so equipped to be made inoperative pending satisfactory completion of dump valve tests outlined by the Bureau was issued, as it was believed that any demonstrations involving the safety of dumping fuel should be made without a load of passengers on board."

Dump Valves May Again Be Made Operative

In his letter Mr. Jacobs stated, "The order requiring the sealing of fuel dump valves is effective only until such time as the operator or manufacturer has demonstrated to the satisfaction of the Bureau that fuel may be dumped without substantial hazard, and upon completion of such tests, the dump valves may be again made operative."

Air Mail Appropriations

Appropriations for air mail for the fiscal year ending June 30, 1939 passed the House on January 18th and are now before the Senate.

The House approved for domestic air mail $15,800,000 and for foreign air mail $10,842,275.

Pay Mileage Figured On Regular Course

The Air Line Pilots Association recently wrote to the Post Office Department, asking whether or not the P. O. D. pays the air carriers for actual miles flown when they operate over alternate routes. Also, whether or not American Airlines has permission to fly between Chicago and New York direct remembering that their regular route runs through Detroit and Buffalo; and what effect this has on the pay they receive from the Post Office Department considering that the direct route is shorter than the regular route.

Mail Pay Mileage Confined to Regular Route

According to Harllee Branch, Second Assistant Postmaster General, "The Department has found it necessary to disregard alternate routes in connection with payments for route mileage. Many companies operated alternate routes purely for their own convenience, such as in the case when TWA operated on Route 2 considerably north of the regular line of the route in order to provide passengers with a view of Boulder Dam and the Grand Canyon. Other similar instances could be cited. Mail pay mileage is, therefore, confined to the regular route course."

Not a Mail Pay Trip

In regard to American Airlines, Mr. Branch said, "It is not known what route is flown by American Airlines on non-stop flights between New York and Chicago. None of these non-stop flights are mail pay trips. The Department, therefore, has never been confronted with the question of making a decision as to what mileage should be paid in such a case."

INTERNATIONAL AIR SHOW

A great International Air Show will be held from January 28 to February 6, at the International Amphitheatre, Chicago, Ill.

Test Aviator Finds Strato WeatherBad

Tomlinson Appeals for Better Forecasts by U. S. Authorities

By STEPHEN J. McDONOUGH
(Associated Press Science Writer.)

Washington, Jan. 8 (AP)—An airplane pilot who became lost in a nightmarish flight through the vast upper air of the stratosphere asked this week for broader weather information and forecasting.

D. W. Tomlinson, one of the nation's premier fliers and a pioneer in stratosphere flight, said that as a result of weather conditions he found between the ground and 35 thousand feet above on a trip from Kansas City to Princeton, N. J., forecasting of the weather into the stratosphere was imperative for the future of aviation.

In previous flights during the last three years, Tomlinson has found "over the weather" flying practical for long distance trips and that at 20 thousand to 30 thousand feet it was "almost perfect." However, on one trip he found clouds, ice and rain extending far above 30 thousand feet, which meteorologists hitherto have declared impossible. That flight came close to being the last one for Tomlinson, making his present appeal for high altitude forecasting a convincing one.

To 34,000 Feet

He took off from Kansas City at 7:15 a. m. intending to land at Newark, N. J., where weather conditions were reported favorable, before noon. It was necessary to climb to 34 thousand feet to get over the clouds and then, whistling along at between two hundred and three hundred miles per hour, Tomlinson's radio reception got progressively worse.

Speeding over Pittsburgh, or near it, the veteran pilot descended to 15 thousand feet trying to

(Continued on Page 5, Col. 5)

"POP" MAYO AGAIN MAKES CONSTRUCTIVE OBSERVATIONS

The N. A. A. held its annual convention at Cleveland on January 10, 11 and 12th. At the same time and in conjunction with the N. A. A. affair there was held a National Planning Conference. The two meetings were so connected and intermingled that it was difficult at times to tell which business was being transacted.

In any event the Planning Conference (or was it the N. A. A.?) passed a resolution to the effect that the regulation of safety should be regulated by the same agency which might regulate the economic phases of the industry whether it be the I. C. C. or any other agency. This is of special interest to the pilots since the N. A. A. was in the past the leading opponent of the McCarran-Crosser Air Safety Bill, which is backed by the pilots.

"Pop" Mayo on Airports

Among the speakers at one of the dinners given by the N. A. A. was William B. Mayo of Detroit, former Chief Engineer in charge of the Airplane Division of the Ford Motor Company, who is better known to many of the old Ford pilots as "Pop" Mayo. The subject of Mr. Mayo's address was "Airports." He very emphatically expressed the view that much of the dissatisfaction with airports throughout the country can be laid at the door of airplane engineers and designers who have been obtaining high speeds by sacrificing the takeoff and landing characteristics of aircraft. He suggested that if the high wing loadings are to be maintained the industry should bestir itself to develop devices for slowing up landings and stepping up the takeoff. He suggested as a possibility a variation of the wing surface.

We know the pilots will vote with "Pop" Mayo once more as to the soundness of his conclusions. We go along with his sly inference that possibly the Bureau of Air Commerce has been negligent in allowing such aircraft to be built and placed in operation. Perhaps we need more Ford Tours to develop the efficiency of transport aircraft. It may be recalled that one of the factors for determining efficiency in the old Ford Tours was the "stick and unstick" time. It may also be recalled that in this particular respect the Ford Trimotor excelled.

Bureau Gives Westinghouse Contract

The Federal Government has awarded a contract for $246,500 of radio equipment to Westinghouse Electric & Manufacturing Co. The equipment will be placed at 50 airports throughout the country.

According to Walter C. Evans, manager of the radio division of this company, Westinghouse will move this entire division of its Chicopee Falls plant, normally employing about 325 persons with an average weekly payroll of $11,000, to Baltimore, Md., to bring it nearer its sources of materials and its most important customer, the Bureau of Air Commerce.

Atlanta May *Have* Control Tower

As the result of a near-collision between an Eastern Air Lines' plane and two Navy planes at Candler Field, Atlanta, Ga., November 19, 1937, the Association contacted Mr. Earl F. Ward, Chief Airways Operation Division, Bureau of Air Commerce, asking for a complete investigation with the view of taking such steps as to prevent a recurrence.

Details of the incident were forwarded by the Bureau to Inspector Wright at Atlanta and the Navy Department for appropriate action.

Negotiating for Control Tower

In a communication dated January 15, Mr. Ward informed ALPA Headquarters: "We are now negotiating for the installation of a radio equipped control tower at Atlanta, and while I cannot tell you officially that Atlanta will be on the list of controlled airports I can say that it is one which will receive every consideration."

Mr. Ward further unofficially stated that the plan of the Bureau is to designate certain airports as controlled airports when the traffic at such airports indicates the need for such designation for reasons of safety, and at these controlled airports there will be in effect certain regulations which will adequately protect any pilot when flying with radio or no visibility.

ASSOCIATION HEAD COMPLETES 4,500 MILE AIR TRIP

On January 9, President Behncke left Headquarters with an itinerary which included the following stops: Cheyenne, Salt Lake City, Oakland, Burbank, Fort Worth, Dallas and Chicago.

The purpose of this trip was to familiarize the councils in these localities with the terms of the Railway Labor Act, as amended, and to point out the provisions of this Act for the settlement of ALL grievances.

Pilots Resent Abrupt Discharges

Mr. Behncke reports successful meetings at all stops. It was very evident on this trip that pilots all over the country are becoming more and more resentful of the abrupt policy, long indulged in, of firing pilots "summarily" without proved cause, thereby terminating the earning power of a professional man who has taken years to reach the position of an air line pilot. It was found in a number of instances that the pilots discharged did not know the real causes for their releases.

Pilots Have Right to Hearing

The position that Headquarters is taking, backed up 100 per cent by the pilots, is that any pilot severely disciplined or released has a right to a proper hearing between himself, his representatives and his company officials. If this hearing does not settle the matter, it should be submitted to an adjustment board, properly constituted as outlined in Title II of the Railway Labor Act.

Act Has Been Successful on Railroads

The railroads have been very successful for many years in settling their troubles in accordance with this Act, which specifically states that all disputes between carriers and their employees be handled according to the requirements of this Law, and there is no reason why the air line management cannot do likewise.

The Railway Labor Act, as amended, covers pilots and other air workers in the same way and to the same extent as it covers all railroad workers.

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"Public safety calls for pilots of high character and great skill. The occupation is a hazardous one. Therefore, the law should provide for a method to fix maximum flying hours; minimum pay and a system for retirement or annuity benefits."
—President Roosevelt.

PILOT ERROR

By DAVID L. BEHNCKE

According to late press reports, an award of $50.00 is now being offered for the missing parts of the ill-fated airliner which crashed near Bozeman, Montana, on January 10. Judging from all information available there seems to be no question but what the cause of this accident was structural failure.

In our opinion if the true reasons for all of our accidents were known, it would be surprising to learn just how many were caused by things having nothing to do with failure of the flying crew. Instead of condemning the dead men who have given their lives in the development of the greatest and fastest mode of travel yet devised by human hands, we should laud them for the supreme sacrifice they made for aviation's progress.

Those who in the past have been so ready to condemn the pilots and attribute all accidents to "human error" should take stock of their public remarks and try to make amends.

In a magazine article, March 6, 1937, Swanee Taylor wrote: "It is a galling admission to make, but 99.44 per cent of all air line crashes are due to pilot error." According to an article in Fortune Magazine, August, 1937: "Pilot error is a factor which enters into about 90 per cent of all commercial air accidents."

It is a recognized fact that at the present time it is impossible to know just what percentage of air accidents are due to "pilot error." And where accurate figures are not available, the only logical thing to do is to revert to common sense.

For example, if we were to take Taylor's figures of 99.44% pilot error, into the remaining .56% (a little more than one half of one per cent) we would have to crowd structural and mechanical failure, weather, air line management, and admitted shortcomings of the regulatory agency of the government, including radio failures, inadequate aids, faltering beams, etc.

Fortune Magazine takes a little more liberal stand by allowing 10% for all other causes.

The public could hardly be expected to accept such illogical conclusions and we do not believe that it does. Also, the public does not like mystery when it involves the loss of human life. To blame everything on the pilot does not answer the questions the potential air travellers are asking. Would it not be better to tell them, as near as is possible, exactly what took place and assure them that corrective measures are being taken?

In strong contradiction to the "pilot error" publicity come the remarks of Juan T. Trippe, president of Pan American, who said recently when the Samoan Clipper sank in flames, January 11: "The Captain and his flight crew are entirely blameless." And President Croil Hunter of Northwest, who stated in regard to the accident mentioned above: "An investigation of the crash indicates the accident was not due to weather conditions, visibility, NOR TO HUMAN ERROR of either the pilots or ground crew. Evidence indicates that the ship was on its course, maintaining proper altitude when misfortune overtook it. Therefore we have grounded all ships of this model until we receive a final report of the qualified investigators."

(Continued on Page 5, Col. 1)

Ledbetter's "Chickens Come Home to Roost"

JAP LEE FILMS NEW DAUGHTER

By PILOT DUKE LEDBETTER
Council No. 50—A. A.
Nashville, Tenn.

Dear Friends:

The theme for this month's letter will be that old saying, "Chickens Come Home to Roost."

If you care to read any further I will try to explain just why I have adopted this proverb as my own for this particular occasion.

You see, in my futile attempt to pass on to you the activities, intimacies and some of the peculiarities of our council and its members (also some of the members of nearby councils that, shall I say, are "fortunate enough" to come in contact with us at Nashville) I have been accused of having a perverted sense of humor. Maybe so! Maybe so!

At least two of these finger-pointing, humor-lacking members have been so bold as to come right out and say to me: "You must be mistaken; 'Snake' is not my nickname." And, "Duke, you know Flash does not flush chickens."

"Snake" Hardin Retaliates

Regardless of the consequence and taking into consideration the high type citizen and lack of reptillian traits that are outwardly apparent in "Snake" Hardin, I am firmly convinced that the name is applicable and I'll tell you why.

Of all the mean, low, despicable tricks for a man to conceive, I believe Hardin has reached a new low. Know what he does? No? Well, I'll tell you and then you can readily see what I mean when I say, "Chickens come home to roost."

When "Snake," I mean Tom, comes in on trip four from Dallas and I'm to continue the trip on to Newark, we greet each other cordially as if there were not the slightest animosity between us and the conversation goes something like this:

Hello, Snake, how's the ship?

Hello, you ——, the ship's all right if there's somebody in it that knows how to fly it. (That ever - present disarming smile doesn't faze me in the slightest.) So then I say:

Too bad that you are unable to get the hang of this modern equipment. But, never mind that now, what kind of winds did you have at nine thousand feet?

Then Hardin gets a very serious expression on the lower half of his face and proceeds to give me BOGUS WIND ALOFT INFORMATION. So you see, "Chickens come home to roost."

Flash Tackles

Last month in the course of my letter I mentioned something about Flash, Walter Pharr's Irish setter, and just to prove to me that Flash did not chase rabbits and did not flush chickens Walt invited me to accompany him along with Glenn Nye, on a quail hunt. I went, and right here let me put you straight; Flash does not flush chickens — he tackles them. Anyway there's one chicken that won't come home to roost.

Advertisement seen in one of the Nashville newspapers: Wanted to sublet, lovely furnished apartment in one of Nashville's more exclusive apartment buildings. One block to gas works and one-half block to railroad yards. Slightly used gas masks and coal shovels go with apartment. Believe only ex-coal miners will be interested. Phone SOot 2002. Ask for McInnis or Stroud.

Whether a desire to save the company some money on the price of a hotel room or an aversion to the long slow ride from the airport to the hotel prompted Harold Matheny to spend the night in one of our sleeper planes on the ground at Columbus the other night, I am not at liberty to say. However, the consequences were very unsatisfactory to everyone concerned except the doctor whom Harold called in when, after a thorough self-examination, a unanimous diagnosis of galloping pneumonia was his decision. However, the doctor disagreed with Harold's diagnosis and treated him for a cold. Harold recovered and paid the doctor off in dimes and quarters that he had saved up over a period of months for just such an emergency and the poor doctor is still trying to convince his partner that he did not hit the jack pot.

Jap Lee Has Daughter

Boy, Oh Boy! Did I have a good story on Jap Lee. But after due consideration I decided it would be better not to print it. I'm afraid it would bring a whole flock of chickens home to roost and right now I have all that I can handle for some time to come.

It will be old when you read this but right now it's news; Jap Lee is a poppa. Yessir, a baby girl born on Christmas day. Can you imagine any man being so scotch as to have his baby born on Christmas day so as to consolidate Christmas and birthdays?

Also, Jap has exclusive movie rights on the baby and just to show you the kind of man he is, thirty minutes after the kid was born he had her stretched out on a table with flood lights blazing and the nurse prodding her in the side to make her laugh and chortle while he took movies of her antics. What's this world coming to anyway? And something else too, he used colored film.

Post Hole Business

Well, boys, the latest rumors have it that Bill Moore, our stock market tycoon, not only has been buying heavily into the portable post hole market but is seriously considering starting a post hole farm on the banks of the Cumberland near Nashville.

In a statement to the press last week Moore said, "It is my firm belief that this is virgin territory for the post hole industry and with my uncanny ability of knowing a good post hole when I see one I say without hesitation that my organization can and will produce some of the finest post holes the world has ever known."

Other Moorisms were to the effect that insofar as he knew there was no actual shortage of post holes but with his ever - present farsightedness he plans to start a number of men cutting posts and thereby creating a ready market for his surplus holes. His company has adopted the slogan, "You furnish the post; we furnish the hole." He also plans an export business and thinks that red clay post holes will by far surpass anything on the market at the present time.

In a confidential statement for immediate release Moore stated that after years of fatiguing work he has discovered the secret of making a round post fit a square hole, but is not at liberty to divulge the secret as yet. Prices for the various types of post holes may be obtained by wire, 'phone or writing. In other words, just intimate that you have a post without a hole.

"To fly West, my friend, is a flight we all must take for a final check.

In Constant Memoriam

Active

Accidental

Adams, John B.—U. A. L.
Anderson, Lloyd—U. A. L.
Andert, Paul A.—U. A. L.
Barron, John M., Jr.—A. A.
Bickford, L. A.—P. A. A.
Bigelow, Ed.—U. A. L.
Blom, Edwin W.—U. A. L.
Bogen, W. L.—W. A. E.
Bohnet, Frederick L.—T. W. A.
Bolton, Harvey F.—T. W. A.
Bontrager, C. M.—R. A. L.
Berchers, Adrian—P. A. A.
Bowen, J. E.—T. W. A.
Bowen, Lewis L.—B. A.
Briggs, Francis W.—A. A.
Broughton, D. E.—U. A. L.
Brunk, Paul S.—P. A. A.
Bucher, Charles L.—P. A. A.
Cohn, Hanley G.—W. A. S.
Cox, Floyd—Ludington
Davis, Alfred W.—U. A. L.
Davis, Douglas—E. A. L.
DeCesare, Frank—P. A. A.
De Cesare, Joseph G.—U. A. L.
Dietz, Stuart G.—E. A. L.
Dixon, Andrew, Jr.—D. A. L.
Dunn, Stephen—P. A. A.
Fields, Glenn T.—A. A.
Fuller, Ray E.—A. A.
George, Hal—T. W. A.
Grover, R. Boyd—U. A. L.
Haid, Arthur A.—N. W.
Hallgren, W. A.—A. A.
Hill, George W.—A. A.
Holbrook, Clyde M.—A. A.
Jamieson, W. L.—E. A. L.
Kelsey, Harold J.—A. A.
Kincanon, Ted N.—A. A.
Komdat, Albert C.—E. A. L.
Lewis, Harry C.—T. W. A.
Livermore, Joe—N. W.
Lucas, Al—W. A. S.
Lucas, Verne—Ludington
Lynn, John B.—C. & S. A. L.
McMickle, Harold—P. A. A.
Malick, Forrest E.—U. A. L.
Mamer, Nick B.—N. W.
Marshall, Gerald V.—A. A.
Montee, Ralph—T. W. A.
Montijo, John G.—V. A. T.
Morgan, Howard R.—T. W. A.
Mossman, Russell C.—C. & S. A. L.
Neff, Harold—U. A. L.
Noe, Earl J.—T. W. A.
Odell, M. T.—A. A.
Owens, Clifford P.—W. A. E.
Paschal, A.—P. A. A.
Potter, Norman W.—U. A. L.
Pursley, C. H.—P. A. A.
Radell, R. W.—U. A. L.
Riggs, Russell S.—A. A.
Robbins, Wm. J. B.—A. A.
Rousch, Chas. W.—N. W.
Rust, F. H.—A. A.
Sandblom, J. V.—C. P.
Sharpnack, J. W.—U. A. L.
Sherwood, George C.—W. A. E.
Tarrant, Harold R.—U. A. L.
Thompson, A. R.—U. A. L.
Underwood, Sanford L.—A. A.
Vance, Claire K.—U. A. L.
Waldron, Joe—A. A.
West, F. W.—N. W.
Weatherdon, Edwin—A. A.
Wieselmayer, Otto—P. A. A.
Worthen, John A.—W. W.
Zeier, Carl F.—C. & S. A. L.

Natural

Cochrane, Robert M.—U. A. L.
Fife, John A.—C. A.
Hohag, R. J.—N. W.
McConaughey, Ira M.—A. A.
Phelps, Henry T.—P. A. A.
Swanson, Axel—A. A.

Inactive

Burford, Dean W.
Caldwell, G. Q.
Drayton, Chas M.
Noyes, Dewey L.
Ormsbee, F.
Shelton, Boyd M.
Stark, Howard C.
Wheaton, Harold H.

Waiting List

Brock, Wm. S.
Kiser, Daniel

Unemployed

Darby, James E.
Hays, George L.
Keadle, Floyd E.
Rhiner, L. H.

Honorary

Rogers, Will

HY SHERIDAN WRITES COLONEL GORRELL ON SUBJECT OF NET PROFITS

PACIFIC PARADE

By PILOT A. W. STAINBACK
Council No. 57—U. A. L.
Burbank, Calif.

By working at it month after month, this column has finally dug up for itself a reader or two, and in widespread and most unexpected places. We discovered them by the black-cat-in-a-dark-cellar technique; i. e., by the squawk when they're stepped on. From the east coast of South America, from Chicago, and even from the Los Angeles area — where we thought nobody had time to read —have come indignant wails from pilots who take exception to what they consider is our attitude toward the D. O. C.

Let's Get the Record Straight

Let's get the record straight. In the first place, last month's effort which seems to have started most of the fuss was over the signature of "Little Pink," an irrepressible individual for whose effusions no one, least of all the conductor of this column, accepts any responsibility. Secondly, we wish it distinctly understood that any cracks appearing herein have in no sense been directed at the field personnel of the Department. Without exception, in this writer's experience, those who actually administer the regulations are conscientious, able men trying hard to help the industry under a policy determined by politicians for political advantage. This column's quarrel is with those politicians, in the Bureau and out of it.

Just Like Uncle Thad

To dislike Bureau personnel because of what goes on in Washington would be to act like "Little Pink's" Uncle Thad. Uncle Thad is a mild-mannered man, so chicken-hearted that he hates to see the first cold snap in November 'cause it always means hog - killin', so Cousin Clem—that's the one married Aunt Sudie's Olie — was kinder surprised one dav to find him beatin' the livin' daylights out of Kate, the old grey mule. "How come?" says Counsin Clem.

"Dad drat her," says Uncle Thad. "Will Sessoms, what I bought her from, has gone to work for the WPA."

"What's thet got to do with it?" Cousin Clem wants to know.

"Wal, WPA's part of the Guv'ment, ain't it? An' I hate the stuffn' out uv Jim Farley!"

—•—

Question of the Month Department.

Why is it some of us can make more mistakes typing with two fingers than most people can with eight fingers and two thumbs?

(Safety in numbers!—Ed.)

"PRESERVED TO POSTERITY"

By PILOT H. W. SHERIDAN
Council No. 39—A. A.
Chicago, Ill.

Dear Friend and Creditors:

If there is anything wrong with the following news item, the hero thereof can provide the real facts, which will be printed. My current janitor and bodyguard, First Officer (Charlie McCarthy) Griffin, acting as leg man gathered the facts which are here preserved to posterity. Capt. Joe Glass, who will someday rival Midas if there is anything in the axiom that silence is golden, turned to Stewardess Anna Little Moore and said, "Let's." Miss Moore, as soon as her ears stopped ringing, replied, "Big boy, I was all readied up to say 'no' but darned if you haven't talked me into it."

They Couldn't Land on a Yellow Sheet of Paper

On the night of January sixth Capt. Usher Rousch and First Officer Stan (Lucky) Gerding flew their synagogue—eh—their Douglas to Newark. The night was so dark they couldn't see a soul. They couldn't see the Newark airport (adv.) either. The weather that was given to them was on a yellow sheet of paper, but the boys couldn't land on a yellow sheet of paper, unfortunately. They had to land on the backyard which had been designated an airport. The weather report to them was quite interesting, like all history, but the radio kept a secret the weather that was lying on the field at the time they tried to wrestle the Dizzy Three to a shoulders-down on the runway. The air thereabouts was as full of muck as a redhead's girdle is of welts, there was a terrific cross wind at five hundred feet duly reported by westbound Capt. M. D. (Champagne) Ator but kept from Rousch and Gerding in case it might scare them, with a dead calm below which made staying on the beam in a blind approach a job that would have given Moses pains in the back. In addition, it is understood, the sensitive altimeter had its feelings hurt and was lying. There was fog and mist and sulphur smoke and splits in the beam, and it rained.

Well, the rain shattered on the windshield so you couldn't see through it any more than you could through a rest room beaded glass window. (Remember?) But the boys knew that if they turned back to Buffalo where the weather was reported (a word, gentle reader, used by the airways weather service in lieu of saying guessing contest) worse than at Newark, and they got into trouble at Buffalo, the investigating board in all sincerity would ask for the official Newark teletype weather sequence, and find, "Dear, dear, another pilot error."

The Altimeter Lied

So the boys corkscrewed one eye over the instrument board, while the other bugged out a foot straining to pick up just one little light, dear God, just one little light. The radio said, "N, A, N, A, On Course, April Fool . . ." The Dizzy Three reared and bumped and sunfished, the torrent of rain cascaded against the glass, the altimeter read two hundred feet. The wheels came up through the wings. The boys were surprised.

One Doughnut, Thank You

Well, we are all captains and first officers now. We have dignity, we have prestige. We also have one doughnut for breakfast, official, complete with hole. The hole would be more nourishing if the weather people would put it over the fields when they report that the visibility is two miles. The accounting department takes fifty cents off the expense account by reason of the doughnut. Washington could use those boys. Do they do right? They doughnut. (There is some mental strain to this flying, isn't there?)

We are now in a class with bell captains, animal trainers, and captains of the head. "Mate," says Capt. Proctor, "if that stewardess makes that face at me again, put her in irons. And spit over the side before you make that next estimate, your last one was rotten." The dear old "OK" will have to go the way of the Jenny, along with "Okey dokey." From now on the air will be foaming with "Aye, aye, sir." Think of the satisfaction of the greater prestige the captains will have, how it will make for more cordial relations and greater efficiency! Airways: "American Trip Six will remain at seven thousand feet until United Two and Six, TWA Eight and Ten and Eastern, Two, Four, Six and Eight land." Capt. Gumshoe Adiabatic: "I'm loading up with ice at seven thousand running short of gas." Airways: "Aye, aye, sir." Boy, that's going to feel good.

Beams That Work

Within a year we will have a hundred per cent completion of schedules. This information comes from our old friend, Stormy Roos, nicknamed Stormy because he used to fight for the pilots before we were promoted to titles and doughnuts. Stormy is now in Airways, was recently in Washington and got the word directly from the boss. They have seven million dollars for airway aids, all kinds of new gadgets. There is even some talk of getting beams that work, but this is doubtless only another rumor. The number one airway aid, airports, is under consideration, it is said, but this wild tale probably was concocted by some optimist who was hypnotized by the fact that the Department has recently sent out questionnaires to the air line pilots asking them if Hoover Field at Washing is safe under certain visionary conditions. First Officer Harry Clarke claims that that is one questionnaire that answers itself; he claims that any time the B. A. C. finds it necessary to circularize the pilots to find out if an airport is safe, they already know the answer or they wouldn't have drawn up the questionnaire. Harry is just too logical to make a political success. Always trying to make things simple and uninteresting.

Between the two advertising agencies of United and American there has recently been a cat and dog fight. Somebody in the sales departments found out that there was a chance to get a passenger, and it went right to their heads. The United boys said, "Fly the Main." The American boys replied, "Pain Line, if you ask us. We are the Low Levelers." United lighted another cigar, called in the steno, "Low Lifers." Col. Gorrell admonished, "Now, now, boys. Don't scare the passengers. What have we got pilots for?" So he took the boys from both camps to dinner, and with their mouths full they couldn't talk any more, and the incident was all over; "the incident was closed" as it was for the boys who were killed on the Panay. During the sniping, however, the strain on the steno staffs was great. One of Mark Nevill's dimpled assistants went home to a troubled slumber, and she had a bad dream.

A Bad Dream, Well Punctuated

There was a furor in the sales headquarters, the officials were glaring at newspapers and swinging swivel chairs in mental agony. Over Mark's shoulder she read a United ad:

For a long . American has been in a ,
It's just another case of a lazy ; a revel

In getting bound up They can't bring in a ship unless it's at a Low Level

Now if they keep on getting as Low as they're getting brash
They'll bring their ships into the ground with a —
Mark spit out his finger nails and said, "Take an ad!"

She was a roving steno
Her traveling was brisk
But she didn't fly United
She had no *

Not long ago Capt. Jimmy Boyd swung a leg over a Dizzy Three at Buffalo and yipped for Newark. The weather enroute was underslung and as Sperry bucked him through the air, he was flying blind. He sacheted down the spiral beam over Elmira at nine thousand feet, covered with cloud and self-esteem. And in a few minutes his left motor went "Poo." The pistons got into the oil holes, the connecting rods wrapped snugly around the crank shaft, the cylinders tied themselves around the crank case. The motor was as badly entwined as a couple parked in a coupe on a cold night. Jimmy poured the Wheaties to the right motor, but the ship began to mush. "Grape Nuts," said Jimmy, or something like that.

"Request Airways authority for a lower level. The ship won't stay up here anyway. The left motor is dead." She mushed right down through the upper overcast, and geeting into clear air between layers at four thousand feet, she was able to hold her own there. The boys pulled up the landing gear as tight as possible so that the tires wouldn't be scratched by the combing peaks just below. There was a low overcast at Newark, and the smiling (another adv.) captain blandly requested Airways to clear the track so that he could land at the field on a direct approach, since this particular captain is somewhat allergic to threading his way among smoke stacks with only one motor working, the sissy. The fourteen tons of cranky metal grunted down through the overcast, nose pointed right at the Newark field, the first time that field has ever looked good to a pilot.

But just underneath him was a Boeing. Jimmy hauled back on the reins, and up they went, missing the maverick. Then he nosed her down again, desperately trying to get on that patch of rolling dirt. After pulling up, he was high. It takes a shoe horn to get a full grown airplane into Newark, anyway. The height translated into too much speed, and Jimmy saw that this landing was going to be a home run, over the outfield fence. He opened up the right motor — the throttle still has a bend in it—snapped up the landing which came up in just a week. The noble first officer eased up the flaps. The right motor got red in in the face.

"Nothing Wrong With Pilots' Judgment"

That fellow that walked across Niagara Falls on a tight wire has very little idea of how it feels to be on the ragged edge. They wallowed across the fence, between the light towers of the railroad yards. The smoke stacks ahead looked like a field of asparagus to a worm. Jimmy began a turn as gentle as the droop of a married woman's eyelid, turned away from the stacks, got over the water, hoping that the drawbridge was open. Fortunately he could turn toward his live engine. If his right had been dead instead, it would have been unanimous. Jimmy, being a pilot, got her back and slapped her onto the port. Hats off to an aviator. At the next pilots meeting the officials stated that they had studied his report of the incident carefully but could find nothing wrong with his judgment. (Remarkable! Remarkable! Remarkable!)

Like all good bits of history, this one has a sequel, too. The other day in the Douglas Hotel in Newark, where the pilots stay, Capt. Ted Howe was headed for the street.

"Where are you going, Ted?" asked Jimmy.

"Just out to the drug store to get some laxative. Want me to get you some?"

"Hell, no," retorted Jimmy. "I have my memories, haven't I?"

Some of the lads have been having a little trouble with the Dizzy Three's coy habit of getting a wing down on a landing approach. The trouble was duly reported to the engineering department. High Priest What - Crank - Amen observed, "So a wing goes down on the approach, does it? Well, the other wing goes up just as much, doesn't it? That averages out."

"What annoys me," admitted Lucky Gerding, "is when they both go down."

Wanda Fishtail was asking where Jimmy Towne was, and was told that he was out practicing low approaches. She inquired, "In the Douglas or the Robert Treat?"

Pilot Bryant's Wife Dies

Early in January there died a good and brave girl, the wife of our Pilot Bryant. Although she must have been suffering great pain, she had courage enough to be grateful to those who were trying to help her, to be thoughtfully considerate of them. She must have known those last few days that she had no chance, yet she was cheerful, cheerful so that she would not depress her friends. No greater courage than that has been seen on any battlefield. A life that ends on a note of inspiration to us all has not been in vain. Let us remember.

In passing, let us note that First Officers Dale Dryer and R. E. Pickering gave their blood to help. Every available pilot offered his, even though it meant the loss of a trip or more. Seems as though you have to mine to get at the gold in human nature, but it is kind of nice to know that it's there if you sink the shaft deep enough.

A Little Outside Help on the Schedules

You may not believe it, but this column got a contribution. This one is from the Rev. Robert Griffin, evidently the result of an inspiration when we were holding our heads on with our hands as we tried to make honest men of those people who drew up the schedules:

—•—

A Pilot's Prayer

Now I lay me down to sleep;
Making schedule's quite a feat.
Should I do it another day
They'll whoop up the schedules
and lower my pay.

—•—

In shoveling through some congressional records, I found a defense of Dick Merrill by Col. Gorrell. The official board of inquiry had found the pilot in error because he "came down when he didn't know where he was," although there was no beam reception, the plane was nearly out of gas and the forecasted wind of SW 25 turned out to be SE 95. Like all other reports of these official boards, this one carefully failed to state what the pilot should have done. You didn't get a copy of this report, as is required by regulation, because it was suppressed, but I got one. Col. Gorrell stated, according to the congressional record that I read, that Pilot Merrill was not at fault, which tempts me to write him an open letter.

An Open Letter to Gorrell

My dear Col. Gorrell,

Permit me to compliment you, sir, upon your very fine defense of Mr. Merrill before the Copeland committee. In my opinion it showed both insight into flight problems, and financial perspicacity.

Air line pilots are worried men because experience has shown them that no matter what happens, the pilot will be deemed in error. A fine record of overcoming emergencies means nothing. They have families and they are worried about their future. They are the only class of people in America who are wrong, guilty, until proved innocent. If, to cite another cause of unnecessary worry, a minor physical deviation from perfect is discovered upon medical examination, the pilot's livelihood is gone. Now a worried mind is not a quick accurate mind, you will agree. Where a thousand little but vital mistakes must be avoided, a distracted mind is not the most efficient. Is the challenge too great for the authorities?

No doubt net profits are of interest to air line management. A crash eats into the net profits and in addition keeps unknown thousands from flying, at least for some time.

The net profits account has another cancer which is doing considerable eating, and like all cancers is doing it invisibly. I discovered it through talking to many regular air travellers who have stopped taking the air lines. The cancer is "pilot error."

What these people say is summed up in a few sentences by one who is a golfing friend of mine. "I read that the investigating authorities say that the majority of air line crashes are caused by pilot error. It is either true or not true. If it is not true it is whitewash and it scares me. If it is true, either the air line managements are incompetent in that they cannot tell that a man is a poor pilot after years of supervising him, or they are compelling their fliers to attempt hazards that are too great for human beings to overcome. In their advertisements addressed to me, they say that they have the best pilots available, but in their investigations they say the men make disastrous errors. Personally I don't think that the railroad engineers are any better now than they were

(Continued on Page 6, Col. 1)

Best wishes for Pan American's Pilot James E. Anderson and Braniff's Pilot Don George; both are contemplating marriage in the near future.

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FATIGUE STUDIES ANALYZED AND EVALUATED

By Lt. Col. Malcolm C. Grow, M. C., U. S. Army

(Reprinted from The Military Surgeon, Feb., 1936.)

The symptom complex known by the term fatigue has been studied from many angles over a considerable period and yet one must admit that our knowledge of this condition is largely conjectural at the present time.

The clinician has had one line of approach and the physiologist another, the psychologist a third; despite the considerable time and effort spent, there appears no common ground of agreement.

The purpose of this paper is to evaluate the results of previous work on this subject, to analyze the results and propose an angle of attack for which no originality is claimed, because all the deductions are based on the accurate and patient work of previous observers.

Clinical Definition of Fatigue

According to Gillespie,[1] a person is fatigued when he is capable of less general activity than would be expected from his general mental and physical equipment and when this diminution in activity is accompanied by a sensation of fatigue or exhaustion or of weakness.

Clinical Varieties

Efforts at classification have been many and fatigue has been divided, by various observers, into a number of varieties, examples of which follow: 1. Physical. 2. Functional. Gillespie gives the following etiologic types: 1. Constitutional. 2. Those due to organic disease. 3. Neurasthenic types ("Irritable weakness"). Again it is classified as: 1. Nervous. 2. Muscular. That all of these classifications are etiologically correct is no doubt true; however, it is proposed that we try to think of fatigue, no matter how evidenced or produced, as an entity and for the purpose of this paper no classification will be attempted. It is believed that this simple plan of approach will help us view this very elusive condition in a broad general way and with this opportunity of perspective, our penetration to the heart of this complex subject may be clarified.

Etiologic Studies

"Fatigue is manifested by subjective and objective phenomenon and thus lends itself to clinical and presumably to laboratory analysis."—(Gillespie.)[1]

According to the same author, there are five divisions to the fatigue syndromes: (a) Constitutional; (b) excessive effort; (c) auto intoxication; (d) emotion; and (e) psychoanalytic theories. Let us consider these in order.

Constitutional: That some individuals are constitutionally more prone to manifestations of fatigue is a common observation. These people are often spoken of as "born tired." All their lives they have been afflicted with this chronic tiredness. The slightest effort, either physical or mental, increases their chronic state of fatigue.

Excessive Effort: Excessive effort—and by that is meant muscular effort—leads to fatigue; bear in mind, however, in the normal, healthy individual this effect is transitory and does not lead to a prolonged state of irritable weakness. I have heard several people describe this as a "healthy tiredness." They realize its transitory nature and know from experience that by a few hours of good sleep or merely relaxing for a proper time, all the symptoms will disappear.

Auto Intoxication: By this condition it is presumed that the individual is poisoned by the accumulation of waste products due to faulty metabolism or faulty elimination. There is no doubt that any condition which lowers the general tone will render the individual more susceptible to fatigue. It is not gainsaid that many individuals of the neurasthenic or "irritably fatigued" type display gastro-intestinal symptoms. That these are due to accumulated toxins is questionable because no one has succeeded in demonstrating these endogenous toxins except in complete gastro-intestinal obstruction.—(Gerald)[3] and (Felty)[4].

Emotion: Many observers have long suspected a close relationship between emotion and fatigue. Indeed, Dejerine believes the real cause of fatigue lies in the emotional equipment, and Creuze speaks of an emotive constitution. There is no doubt that following the profound stimulus of various psychic reactions, a sense of fatigue is felt. Especially is this true in the sensitive individual and when the emotion is of a depressing or fearful nature. Crile[5] states that "emotion causes a more rapid exhaustion than is caused by exertion or by trauma excepting extensive mangling of tissue, or by any toxic stimulus, excepting the perforation of viscera."

Theoretically, muscular elements appear in every emotion and though outward manifestations of emotions are suppressed or concealed by the individual, the effective phenomena are all the more increased.

Psychoanalytic Theories: The followers of the various schools of psychoanalytic practice feel that many of the cases of neurasthenia that come to them for relief are benefitted by treatment aimed at the removal of suppressed conflicts often of an autoerotic nature.

Measurements of Fatigue

Continuing the study of former etiologic works on fatigue, efforts have been made to evolve a measurement of fatigue by physiologic laboratory methods.

Hastings stresses the importance of the following on fatigue.

1. The muscle as the primary source of energy transformation.
2. The blood as the vehicle of supply and waste removal.
3. The cardiovascular system as the distributing mechanism.
4. The respiratory, alimentary and excretory system as a source of supply and means of waste removal.
5. The endocrine glands and nervous system as the co-ordinating and regulating system.

Following the trend of the above scheme for laboratory research, F. A. Moss, J. H. Roe, Oscar B. Hunter, Leslie French and Thelma Hunt,[6] in a series of exhaustive laboratory analyses, developed the following apparent fatigue changes in healthy individuals subjected to exhausting physical exercise:

Fatigue Changes

a. Hemolysis of red blood cells after exertion.

b. Increased resistance of red blood cells to laking with hypotonic salt solution.

c. Increased saturation of hemoglobin by oxygen.

d. Migration of chlorides from blood cells to blood plasma.

e. Demonstrable changes in urine—(changes in sulphurs and phenols).

f. Increased systolic, decreased diastolic and increased pulse pressures.

g. Increased lactic acid production.

Conclusions

Their conclusions were as follows:

(1) Fatigue is a phenomenon of changed physiochemical relationship.

(2) Blood pressure tends to fall into definite fatigue curves.

(3) Measurement of decreased CO-2 combining power of blood with an increase in CO-2 in the tissues and measurements of metabolism offer reliable quantitative measures of fatigue.

(4) Muscular fatigue is accompanied by increased white cell counts.

In 1929, Gillespie[7] reported a series of tests on patients in Guy's Hospital, London, suffering with chronic fatigue in which an effort was made to measure fatigue by laboratory tests which included tests of the cardiovascular system, exercise tolerance tests, blood examinations, respiratory function tests (vital capacity), gastro-intestinal tract tests, sugar tolerance and blood sugar estimations, basal metabolism rate, investigation of the vegetative nervous system, oculo cardiac reflex and urine examinations. These cases belonged to the large group of neurasthenics, and they were not subjected to exhaustive physical exercise prior to the test. His conclusions were as follows:

In a considerable proportion of persons complaining of persistent fatigue or fatigability, without organic disease, there exist cardiovascular anomalies, especially inadequate response which determine the blood pressure and tolerance of exercise less than are found in normal persons. The conditions in the cardiovascular system in the body at rest were less frequently abnormal. These circulatory subnormalities were of the type that would be readily modified or even abolished by training.

The red count, hydrogen ion content of blood and hemoglobin were all within normal limits. Vital capacity was somewhat below normal limits in a considerable proportion. The sugar tolerance of the blood was somewhat diminished while the basal metabolic rate was not significant. These individuals showed a marked irritability towards pharmacodynamic drugs, and an insufficiency of sleep and focal infections do not seem to have much relationship.

Results

Gillespie sums up the results as follows:

Adequate objective evidence of fatigue or exhaustion was lacking in the patients examined and no assistance was derived in the search for a generally applicable test of fatigue.

However, it must be noted that the systolic pressure on rising from a recumbent position gave an average value of —7.7, this to be compared to the value of +2.3 obtained by Schneider and Truesdell in their unselected group and +3.27 obtained by Stocks and Corn.

The average change in diastolic pressure was +3.5 compared with +8.1 (Schneider and Truesdell unselected group) and with a minimum figure of +14 given by Stocks and Corn, while the pulse pressure also fell twice as much as in Schneider and Truesdell's group.

In summing up the results of the studies, it is shown in the series of experiments by Roe et al that muscular exertion does bring about certain chemical and physiological changes in the body. That these fatigue products are removed and that the bodily functions are restored by proper rest is to be expected, the rapidity of the recovery, of course, depending on the recuperative powers of the individual.

In the series of tests by Gillespie, the patients were of the neurasthenic type; they were not subjected to severe muscular exertion to produce fatigue. Here was demonstrated a hypersusceptibility to the pharmacodynamic drugs and evidence of neuro-circulatory instability; in other words, individuals apparently hypersensitive to stimuli and with a neuro-circulatory system responding badly to these stimuli, but of such vagueness as to defy exact measurement.

Changes in the Nervous System

Hodge,[8] in 1894, in studying the effects on swallows of a day's flight, found that the Nissl bodies in the nerve cells showed protoplasmic changes.

Dolley and Crile,[9] in 1906, subjecting dogs to continuous exercise from one to four hours, noted changes in size of the nerve cells of the brain and changes in relation between the nucleus and cytoplasm of the cells.

Change in Nerve Tissue

Bast and Loevenhart,[10] in studies on exhaustion due to lack of sleep, asserted that in exhausted rats they found that the cells of the spinal cord showed a decrease in the chromatin material of the nuclei, also chromatolysis characterized by granular Nissl bodies and the presence of vacuoles in the cytoplasm. Apparently, then, there are changes in the nerve tissue following severe and fatiguing exercise and in exhaustion due to lack of sleep. That these changes are not marked or that the findings universally agree is not surprising. Little is yet known of the true chemistry or physiology of the nervous system when one departs from the field of gross pathologic change. What actually takes place in the nerve cell when a stimulus is received and a response to that stimulus is induced is still in the realm of the conjectural. That something does take place everyone admits. Nerve energy is a real entity and is as indestructible as any other form of energy. Crile[11] is convinced that it is of an electro-chemical nature and there is much to support his conclusion. Nerve impulse may be of the same nature as radio waves of varying lengths and this might well explain the apparent selectivity of certain organs to certain stimuli; a form of tuning in or conditioning for reception of appropriate wave lengths.

This may be the reason for the ordered responses to stimuli eliciting impulses from the brain which pass through pathways in the grey matter without insulating medium.

Present Trend in the Study of Industrial Fatigue

"The study of industrial fatigue has been undergoing a profound change during the past decade. This trend has been away from the physiological toward the psychological. The problem of fatigue has always been complicated in that we have been unable to define it in concrete terms, and it is further complicated in that we have no method, physiological, psychological or chemical, by which we can measure this condition. Man power being replaced by machines makes the study of fatigue in industry different. It is not now a question of simple muscular fatigue; this is passing and now we are more concerned with the effect of man's work on his nerves and mental condition." —Report of Industrial Fatigue Research Board, London.

Dr. Emil Roth tells us that the psychic factor in work is more important than is generally recognized.

In the proportion that physical work is at the same time mentally fatiguing, the greater the alertness it requires, so much sooner does fatigue appear. This is the case with all occupations that are linked with especial danger or where an extreme or unremitting attentiveness is required. This is applicable to the fatigue experienced in military aviation.

In American canneries, for instance, it does not appear that the muscular work is too hard for the girls. Fatigue results from the tax upon eyes and attention in watching the machine which continually carries a stream of vegetables past them. In factories, the summit of accidents invariably is highest between the hours of 10:00 A. M. and 12:00 noon and between 4:00 P. M. and 5:00 P. M.

Mosso says that extreme fatigue produces cerebral anemia and that this anemia diminishes the power of vision. Migrating quail when exhausted by long flights have been known to dash themselves against poles and houses which they could not see.

Summary of Results of Research on Fatigue

In reviewing research work that has been done on fatigue, several important inferences can be made.

Physical exertion appears to produce certain chemical and physiological changes in body fluids and tissues, these changes being more marked as the physical exertion is carried over a longer period and as the point of exhaustion is reached.

That these by-products of excessive physical exertion are the true causes of the fatigue syndrome does not seem to be a tenable theory. It is but natural that this form of energy should produce actual waste products with rather definite chemical findings.

If continuous and forceful exercise of a muscle or a set of muscles were the sole cause of the sensation of fatigue then why should not the heart muscle, which works day and night, year in and year out, vigorously and forcefully, cause feelings of fatigue? No one who has viewed the intense muscular activity of the heart by means of the fluoroscope can fail to be impressed by the power of its contractions. And yet sensations of fatigue rarely, if ever, are referred to the heart. It would appear that we must search elsewhere than the muscular system for the cause of fatigue sensations.

The investigations of Gillespie on a group of chronically fatigued individuals, in which the fatigue was of the so-called neurasthenic type, disclosed individuals more susceptible to certain forms of stimulation and with a certain amount of neurocirculatory instability. That changes in the nervous tissue of fatigued individuals may be present is possible although the findings are as yet rather indefinite. It is felt that this is probably due to the comparatively crude means at our disposal for the physical demonstration of nervous tissue pathology. Gross changes can be detected; when the realm of nerve energy, the mechanics of mental process are approached we have as yet no methods of laboratory analysis.

It must be realized that the division between muscular fatigue and mental or nerve tissue fatigue is not exact.

"After a day's work of either physical or mental effort, one may experience similar subjective symptoms."—(Talbot).[12]

These symptoms are irritability, a slight sense of fulness in the head or a slight headache, restlessness, lack of interest, inattentiveness, a general tired feeling. It is important to bear this in mind because in the beginning of this article we decided to avoid any type classification of fatigue and consider the entire question as a whole. It is also a fact that mental effort producing symptoms of fatigue indistinguishable from that caused by muscular exertion symptomatically, produces no known chemical changes in the body fluids or in the muscles.

Hypothesis of Fatigue

As the results of investigation of fatigue would appear to lead to no very definite conclusion, let us then advance the following hypothesis:

Fatigue is due to the excessive generation of nerve impulses and originates in the nervous tissues of the body. One will at once think of the well-known laboratory experiment; the stimulation of a nerve with the galvanic current, thus causing a muscle to contract. You will recall in this experiment the muscle first shows fatigue and fails to function after a certain time while the nerve still carries on. Yes, that is true, but you have forgotten one significant fact: the galvanic battery is supplying the impulse; the nerve is merely conducting the impulse to the muscle. It is the act of gener-

NEON LIGHTS AT MEMPHIS

East of the long runway at Memphis Airport are new neon guide lights which automatically light up when visibility gets below a certain point. Fifteen neon tubes about six feet long form a guiding beam or arrow from a point 1500 feet east of the big east-west runway to the runway itself, which is floodlighted.

This newest aid to night flying makes Memphis airport one of the safest. The reddish-orange neon lights will penetrate 500 feet of heavy mist, according to Drennan Albrecht, airport manager.

A STUDY OF FATIGUE

(Continued from Page 4)

ating, of creating, of producing the nerve impulse that is exhausting.

Heart Muscle

Let us return to the heart muscle. It is spoken of as an involuntary muscle. By that it is presumed that it acts without our volition. That is true; the impulses which cause the heart muscle to contract appear to originate in the muscle itself and in fact they are not only created there but are even transmitted by mere continuity of muscle tissue. That the impulses that actuate the heart are of myogenic origin is indicated by the following laboratory observation. The absence of nerve cells in portions of the heart muscle which nevertheless exhibit rhythmic contractions for quite a long period of time after complete division. The rhythmic beat of the embryonic heart before the migration of nerve cells to its walls, shows that the stimulus does not necessarily originate in nerve cells.

Contraction of Heart Independent

Porter has conclusively shown that the apex of the dog's heart which is generally believed to be totally devoid of nerve cells can be made to beat for hours by feeding through its nutrient artery with warm defibrinated blood. Unless it is assumed that the heart muscle contracts automatically without a cause it is fair to assume that the exciting cause of the contractions arise within the heart muscle itself. The contraction of the heart is independent of its connection with the central nervous system and will continue to contract in a rhythmic manner for a variable period of time after its removal from the body. In the living animal the heart will continue to beat and fulfill its functions after division of all nerves connected to it. A dog thus experimented on lived for eleven months displaying no striking disturbance of function. The sole function of the nervous system as a whole as regards the heart is one of regulation. The destruction of the sino-auricular node which is supposed to be the point of development of the contraction impulse does not stop cardiac action. Therefore, while the sino-auricular node is the usual primary seat of cardiac impulse it is evident that some other portions of or positions in the auricular wall are capable of developing under the circumstances an additional stimulus. The conduction of cardiac impulse is likewise myodromic through muscle bundles which are connected to each other by intercellular bridges of protoplasm. No drain of creating impulse on nervous tissue here; hence no fatigue symptoms.

Remembering our hypothesis that it is the creation of nerve impulse that causes fatigue, various obscure facts begin to tender themselves to analysis.

Many empirical observations are ofttimes but sign boards pointing to hidden truths.

Take the common saying, "I would like to go to some quiet place and rest." One can conceive of being quite still in a noisy place, but that does not suffice. No, it must be a "quiet, restful place." At once it would appear that the element of noise has something to do with fatigue or tiredness. Experiments along this line by the Noise Abatement Committee of New York City would seem to indicate that work done in a noisy atmosphere sooner or later leads to neurasthenic conditions (irritable tiredness).

Rhythmic Music

It is a well-known fact that rhythmic music, say a stirring march, will prevent fatigue in marching troops. I have seen troops fatigued by a long march spruce up and step out with remarkable vigor when a band started playing, their feet unconsciously keeping time with the music. Here we have evidence of noise or sound apparently curing fatigue. That appears paradoxical until we realize that until this time every muscular contraction was brought about by what we call voluntary action. In other words, we attribute actual willing, a function of the higher nerve cells of the grey matter, to be the exciting cause of these muscular contractions. With the advent of sharp and rhythmic sound this act of willing each movement is subordinated and we have substituted an artificial stimuli, sound, to which the muscles respond in time, with little or no volition and hence diminished fatigue.

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(Concluded in Next Issue)

Canada Holds Up Alaska Air Mail Line

According to Delegate Anthony J. Dimond of Alaska, Canada will not permit flights over its territory until it has worked out details of a proposed British-sponsored route from Billings, Mont., to Fairbanks, Alaska. This has delayed establishment of an authorized contract air mail line between Fairbanks and Juneau.

Mr. Dimond stated that a $70,000 appropriation by Congress last summer has gone begging because Canada has withheld permission for planes to fly over about 250 miles of Canadian territory.

Quoting Dimond, "It would be advisable for planes to fly over that route. Canada has not yet given its permission. The Post Office Department advertised the proposed contract, but no bidders came in."

Pending Air Legislation Threatens To Become Factor In Federal Reorganization Program

By EDWARD G. HAMILTON

The Interdepartmental Committee which was requested to make a study of aviation legislation has finally produced. Immediately after the first of the year both Senator McCarran and Congressman Lea were called to the White House and advised of the contents of the Committee's report and asked to revise their bills accordingly.

Three-man Board

The plan proposed by the Interdepartmental Committee involved a three-man board in the Commerce Department to assume the functions of a commission in the regulation of all phases of civil aeronautics. While the board was supposed to be independent of executive control in quasi-judicial and quasi-legislative matters, all administrative matters were to be subject to the supervision of the Secretary of Commerce and the President. To this end the President would each year designate one of the board members as chairman who would become the executive officer in charge of all administrative matters. Further it was asked that all matters touching upon foreign air commerce should be subject to review by the President because of his constitutional powers over foreign affairs.

Separate Commission

Neither McCarran nor Lea took kindly to the idea of leaving aviation in the Department of Commerce and so advised the President. It is understood they also expressed a doubt that Congress would go along with them on anything but I. C. C. regulation. It is reported that the President is willing to go along on an independent aviation commission but that he is definitely opposed to the I. C. C. However, an encouraging note from the pilot's viewpoint is that the President seems to agree that safety should have the same type of regulation as rates and other economic controls.

Promises to Be Bitter Fight

At the present time the outcome is uncertain. The President seems to have his mind made up that regardless of where these functions are placed there should be a division of administrative and regulatory control along the lines proposed by the Brownlow Committee some time ago, that is, part of the functions of the Government agency, whatever it be, should be subject to executive control. It therefore appears that the aviation industry is placed more or less in the status of a guinea pig to find out how far Congress will go with the administration in its proposed plan of reorganization of Government agencies. In view of the growing opposition of Congress to the plan this promises to be a bitter fight in which the much needed regulation of aviation may be submerged.

If the President succeeds in having a bill introduced which conforms to his present desires, much of the support behind the original McCarran-Lea-Crosser bills will be withdrawn because of antipathy to the reorganization plan. It is rumored that even the proponents of the plan admit that Congress will not permit any reshuffling of the powers and duties of the Interstate Commission. Inasmuch as aviation involves transportation it is logical to assume that those who are prepared to defend the independence of the I. C. C. will not passively stand by while another phase of transportation is made the subject of experimentation. If a precedent is established in air transportation, it will be only a matter of time before the I. C. C. and all the other independent agencies will be reorganized in like manner. Aviation thus becomes the spearhead of the whole gigantic scheme and the industry may find itself on the sidelines while a battle is being waged over their bill which is quite foreign to the matter in which they are most vitally concerned.

If the opponents of reorganization win, as we believe they will, then the aviation bill will be defeated and it will be necessary to start all over again from scratch probably with the original S-2 and S-1760. As long as the reorganization battle is inevitable it seems to us that those concerned with air legislation might just as well stand behind their original bills.

May Result in a Long Struggle

If it were at all possible we should like to see air transportation placed under the I. C. C. immediately and let it there await the outcome of the reorganization controversy. The other fight should be fought around the reorganization bill itself rather than around aviation legislation. It is unfortunate that this other matter should come up at this time as it may result in a long drawn-out struggle which will prevent any affirmative action in the way of legislative relief for the air transport industry at this session of Congress.

GERMAN AIRSHIP SERVICE BETWEEN EUROPE AND U. S.

Recent press reports state that German airship service between Europe and the United States will be resumed in about five months with a sister ship of the Zeppelin Hindenburg, which plummeted to earth in flames at Lakehurst, N. J., last May.

Inflated with American non-inflammable helium instead of the hydrogen which buoyed up the Hindenburg, the new ship, the LZ-130, will have a schedule of 15 to 18 round trips at the rate of three a month until autumn when seasonal operations will be terminated.

Export of Helium Authorized

Congress recently authorized export of helium, on which this country holds a virtual world monopoly. Mined at Amarillo, Tex., 17,900,000 cubic feet of the gas will be shipped to Germany by freighter.

PILOT ERROR

(Continued from Page 2)

If it is possible for them to do so, all those who are so ready to condemn the pilots should visualize what went on in the cockpit of Nick Mamer's plane, the years that he lived during the two minutes from the time his controls apparently became inoperative at 9,000 feet until he hurtled downward into the frozen mountainside; all the while struggling to save his precious cargo, himself, his crew and his disabled plane.

Had fate cleverly erased, as it has the sly habit of doing, all vestiges of evidence as to what actually took place, would it not have been the greatest of injustices to crown Pilot Mamer's twenty years of successful flying, wherein he made many valuable contributions to the growth and development of air transportation, with the miserably deceptive words, "Pilot Error"?

Border Inspection

There is a little inner-administration row between the Department of Agriculture's Bureau of Entomology and Plant Quarantine (BEPQ) and the Bureau of Air Commerce over a non-stop air route between San Antonio and Mexico City.

Plans were about completed for the route when the Mexican fruit fly threw a highly infectious monkey-wrench into the whole set-up. For several years the BEPQ has been fighting a hard battle to keep it out of the United States and therefore demanded that planes from Mexico City stop for inspection at the border.

Proposes Station at San Antonio

The Air Commerce Bureau proposed that the BEPQ establish a quarantine station at San Antonio. If the planes stopped for border inspection, the advantages of the non-stop flight would be nullified.

But, the Plant Quarantine Bureau asked, what good would a quarantine station at San Antonio be if a plane made a forced landing in an American farmer's field before ever reaching there?

Chances are that the BEPQ will lose the battle, having already fought against a non-stop route from Mexico City to Glendale, Cal. unsuccessfully.

Recent Crashes Take Three ALPA Members

ALPA mourns the death of three members this month. On January 11, Paul S. Brunk, junior flight officer, was killed when Pan American's twenty-one ton Samoan Clipper plunged into the Pacific in flames. Brunk became a member of the Pilots' Association in November, 1937 and had been employed by Pan American for a little more than a year. He was unmarried.

Accident on Northwest

Northwest Air Lines' Lockheed Zephyr, which crashed on a snow covered peak high in the Bridger Range of the Rocky Mountains, January 10, had at its controls Pilot Nick Mamer and Copilot F. W. West, both of Spokane. Pilot Mamer had been an ALPA member since July, 1934 and Copilot West's application was received the day of his death. Both pilots were married and Pilot Mamer had one child.

Expressions of sympathy were sent to the bereaved. These brave men will always be remembered by their colleagues and it is hoped that the loss of their lives may not have been in vain but will help build a safer air transportation system of the future.

Strato Weather Bad

(Continued from Page 1)

find a radio free layer of air but conditions were still worse. His case of "jitters" he described formally: "Grave concern was then felt about finding Newark—an impossibility under the conditions without radio."

Therefore, Tomlinson said, he headed for Albany, N. Y., and climbed to 36 thousand feet, where the temperature outside the plane was 75 degrees below zero. The "plane was staggering through the air and extremely difficult to fly by instruments," he said.

Almost Unconscious

After almost losing consciousness for lack of oxygen carried in special tanks, he then headed back for Newark, talked with the station by two-way radio, and thought he was approaching the airport. At 1:30 p. m., when he was almost two hours overdue, Tomlinson came out of the storm with a sea of clouds below him.

The Newark airport had been passed during the storm and "with about 30 gallons of gas left, the plane was headed for Newark in particular and the United States in general." Tomlinson finally dropped down to seven hundred feet altitude where he got one glimpse of the earth, went into a tight spiral and he landed safely in a small field near Princeton, N. J., at 3:30 p. m.

People Who Came to Miami for the Winter Are Getting It—Babbitt

(Continued from Page 3)

fifty years ago when it was always the engineer's fault. If the authorities would point to radio failure, incorrect operating policy or method, and show me what steps were being taken in correction, I would feel that that kind of an accident would not be likely to happen again. But pilot error? No, thanks. I'll take the railroad from now on."

Don't you think that a policy of cultivating the confidence of the public, even in the pilots in whom they are asked to trust their lives, would pay?

Yours for net profits,

Hy Sheridan.

I think that United has hired away our First Officers O'Hara and Hunt. I never had the privilege of flying with Mr. O'Hara, but in Hunt I know that they got a mighty good man.

Back to Rousch

Where did we leave Usher Rousch? Oh, yeah, in the swamp. After the ship slid to a stop in the mud, there was quite a lot of silence, at least until Stan got his breath. The radio would still work, and of course the field asked them where they were. They didn't know the answer, but as a matter of fact they were about 1100 feet from the port. Knowing that a rescue party could not find them, so thick was the weather, Usher cut the compass out of the ship, and with the compass in one hand and a flashlight in the other he started navigating himself toward the field. A mile visibility? Oh my yes! We can show you a piece of yellow paper. Usher violated the regulations, since he didn't have any navigation lights on his shoulders. Before he got to the port he was convinced that all pilots should be equipped with hip-pocket beam receivers. His ears were out of water most of the time. When he fell down and slid on his belly, he made the best speed. Using this warm weather skiing technique, he made it. Then the rescue party started out, composed, as one newspaper put it, of about a hundred police, firemen, reporters, air line employees and other airport hangers-on. They formed a line of skirmishers so that the plane wouldn't get away. After four hours they found the ship, but only because the passengers yelled and whistled. Boy, how they needed Whispering McAlister! But, you understand, the visibility was above limits. During the four hours of waiting Stewardess Lally held a tea party for the passengers, who spent the time in organizing The Belly Floppers Club with Byron Moore the first president. They expect the club to become quite popular, and so do we so long as it remains contrary to the ethics of the profession to tell the pilot what the weather is at the time he prepares to make his approach. Maybe there are some Jap spies around, how do they know?

BABBITT PINCHED FOR SPEEDING

By PILOT W. T. (SLIM) BABBITT
Council No. 18—E. A. L.
Miami, Fla.

The winter here in Miami looks good despite the stock market fluctuation and the cold weather we have had down here. A lot of people came south for the winter—and found it! Several nights the temperature got so low I feared the worst for our proverbial brass monkey! During the cold spell I felt most uncomfortable as there is no way to heat my apartment. I spent a number of the coldest days locked in my "Tile Study" with the little electric heater running hotter than a June bride. I only came out for my meals.

Better Attendance at Council Meetings

The other day I ran into Bob Chew at the flying machine yards. He was muttering in his beard about the lack of attendance at recent council meetings. Seems a few of the members think that sports like playing the nags, fishing, cow pasture billiards (golf) and hunting (mostly dears on Miami Beach) outrates current business.

Unless everybody takes a big interest in these meetings, regardless of all personal feelings, you might as well send your dues to the Salvation Army because chances are fifty to one that's where you'll finish without good organization during peace times. Of course if you don't pay your dues like me, it won't make any difference.

Last issue we neglected to congratulate R. K. Smith on his unanimous election as executive councilman for The Great Aluminum Fleet. Ralph is out to fill the big vacancy left by Larry (Cousin Hugo) Pabst. It's a big assignment, Ralph, but we know you will give them both barrels.

Halliburton on Safety Board

John Halliburton's general knowledge of aviation and engineering won him, by popular vote, a seat on the Air Line Pilots Safety Board. John, when they hold that first meeting wish you would get me some special information. I just wondered what the relationship was between a DC3 and a pawnshop because my pa told me years ago that those three gold spheres displayed over the pawnshop door meant—two to one they can beat you! I well remember the year pa gave me that rare bit of good advice. It was when I was seventeen years old, the year I learned about women, liquor and tobacco. Ever since I haven't cared a damn about liquor and tobacco.

Washington Airport

Before I forget it, did you boys scrutinize the Washington Airport Pictorial in the November issue of The AIR LINE PILOT? I sure did and it was most convincing; to say the least, it scared hell out of me. President Behncke, unless you want to break yourself of the habit of breathing you had better have more foots up than 600 whenever you attempt crossing the Arlington Towers (No. 1 picture, towers listed 600 ft. elev.). These towers are listed by the D. O. C. at 712 ft. and are located on ground almost 200 ft. higher than the place you get the Kollsman. From my own actual tests I would suggest that your ships Kollsman Up — meter indicate over 900 ft. to allow for insulators, etc.

Mentioning the word scared in the above paragraph brought to mind the story about the Scotchman who tells his kids a ghost story ever night to keep from buying Ex Lax.

In accordance with many others I'm sure glad to note advancement of our friend, B. B. McCourry, to the highest attainable position aboard our flying machines. Mac didn't have any Army training but in spite of hell and high water, occasionally a good pilot crops up who never saw those places — Randolph or Langley Fields. Friend Mac and I are in the same class with the local Gendarmes. Just can't seem to operate our motor vehicles to their complete satisfaction. The last time I got picked up for hurried operation I almost wound up in the local Bastile due to my usual trouble—talking when I should be listening. The officer said I was going 55 per hour. I said, "It's a lie; I haven't been out an hour." The officer took that fairly well but when I said, "Your brother pinched me two days ago," he said, "I don't have a brother." I said, "Well he looked just like you; maybe your old man got around more than he told you about." Anyhow, with the exception of the judge getting mercenary in favor of the county, I escaped.

Playing the Ponies

Handicapper McLaughlin of Florida Race Tracks gave me a tip yesterday at Hialeah. I put a fin on the nag to win. The old hayburner wasn't doing bad until somebody in the grandstand hollered, "Milk." The plug stopped dead still thirty yards from the finish line. Frank Kern tried to give me a sure winner today at Hialeah. I asked him, "Is the track lighted?" He said, "No, why?" I replied, "Well if this horse is like the last one you gave me I'll need the lights to see him finish." The one man that knew the horse racing racket claimed, "The only way to beat a horse is with a whip."

Some of the pilots were very much put out about a recent letter from the New York office pertaining to our general appearance and condition of uniforms. W. B. Inman had the tailors build him a new one. Tell you why? W. B. was positive the letter wasn't written to include him until one day the boss saw him in uniform and told him that his uniform was getting so slick a fly couldn't land on it without breaking his—empennage.

Doc Merrill sure took their letter to heart. He got the tailors to attempt to cowl in that German goiter of his again but the second attempt was with little gain. Did you see that big knot on the back of Doc's head? Somebody told him toilet water was good to restore his hair but the other day the seat fell down.

A BELATED LETTER TO SANTA CLAUS

By PILOT F. J. SCHWAEMMLE
Council No. 44—D. A. L.
Atlanta, Ga.

Yes, I know it. Why? Well, it's just one of those things. I failed to send in a newsletter last month and have been on the pan ever since. There is an election right around the corner so who can tell? Maybe it will have the right effect. Maybe someone else would like the job. You would? It's yours. Really, I am sorry. It's the first offense so please don't be so hard on the boy.

Here is a letter that was received just before the usual early Christmas rush.

Christmas Eve.

Dear Santa:

Please, if you possibly can, accept this late order for gifts to give the boys. They all have been very good this past year and are worthy of every consideration. I realize that this letter is being written rather late as it has been detained account headwinds, mechanical trouble and inclement weather, but please, Santa, be a little psychic.

Floyd Addison—Sweeter smelling pipe.

Fred Ball—Anything to cure his present sickness.

Pre Ball — A new Gadgetter, even if you have to design it.

Tex Buice — More and better phone numbers.

G. Cushing — Forty-seven beacons.

C. Dolson—Automatic pilot.

E. Davis — A bundle from heaven.

F. Dick—Ditto.

C. Ingram—Hearty laugh.

P. McCarthy — Cooperative councilmen.

L. McBride—Whistle and bell for Electras.

C. Norton — Decrease in gross weight.

R. Reinhart — Something with more pick-up.

T. Schier — More golf — less strokes.

G. Shealy—You've been taking care of him OK.

J. Slaton—Snore suppressor.

F. Schwaemmle — Newsier column.

To the company, continued financial success, more passengers, better weather and bigger equipment. Last, but not least, another schedule.

To the ground personnel, our heartiest thanks for their co-operation.

To everybody, a very Merry Christmas and a Successful and Happy New Year.

Congratulations are in order. Addison's wife gave him the heir. First arrival on schedule December 18th, with a dry weight of six pounds, one ounce. Understand that he zoomed the field pulling lots of horsepower and with the manifold pressure gage needle up against the peg.

Operations into Meridian, Miss.

After a two year lay-off while the WPA (We Plod Along) overhauled the field, we finally started operations into Meridian, Miss. Officially scheduled to start on January first but, as usual whenever there is to be a re-dedication, the weather was punk so we not only passed up the field but all the dignitaries, speeches, etc. All they knew about planes flying was the sound of the motors overhead. From first hand information understand that the new stop, day run only, will be a swell place to get cancelled out. Who can tell? No one has been cancelled there yet but remember the winter has only just begun.

Christmas Dinner—27 Sandwiches

On the preceding days just before the Christmas holidays our business was very good, usually is. However on the 24th our business was so good that one trip had to pass up the station we usually put lunches on board account adverse wind and field conditions. Net result: It is rumored that somebody ate twenty-seven sandwiches for Christmas dinner. Who? Good Gosh, you just can't throw them away.

Can you imagine it? We actually have a nudist in our midst. Here it is winter with three-shirt weather on our hands but facts is facts. The nudist is our fair haired boy, N. U. D. Buice. We commonly call him Tex. I am inquisitive; just what does the N. U. D. stand for?

Vacations

Freddie Dick pulled a fast one. Guess he thought he wouldn't get a vacation this summer so he up and gets one now. Understand that he is trying to get up his strength as he is about to become a mother. Cheer up, Freddie, they never lost a father yet.

C. H. Dolson, wife and first and second male sections spent the last two weeks of the year on their vacation with families in St. Louis, Mo. Hope that they made good time going up as it is awful hard for Charlie to pass up a hot dog stand or any other eating place without getting a refill.

Boss "Stinky" Davis has been having one coming out party after another, suffering from a streptococcus infection resulting in his neck breaking out with boils that probably feel like Vesuvius in eruption.

One of our most sedate members has gone into the finer points of the Terpsichorean arts. Guess who it is that is par excellence in doing the Big Apple. None other than "Suzy" Q. McBride.

Dame Rumor, or some other dame, has it that Charles Jackson Ingram is about to get shackled. Believe that it must be authentic as he was inquiring about apartments. Tell us who the lucky girl is, Charlie.

Pre Ball has taken up the manly art of ju-jutsu. Understand that it works OK if you can keep both feet on the ground.

Fred Ball Out of Hospital

Fred Ball is to be released from the major overhaul shop about the fifteenth of January. He has been given a major. It seems that they have taken so much from him that we wonder just how much of Fred is left. We sincerely hope that he won't be bothered by similar experiences for many days.

Swapped a run with Norton and he was stuck in Dallas for five days. Got so that everybody was saying, "Where's Elmer?"

Has Jack Slaton ever got on the right frequency?

Who hopes to be transferred to Charleston so that they can buy a yacht?

KAY VISITS PLACES OF "EDUCATIONAL" INTEREST

By PILOT C. M. HEFNER
Council No. 35—A. A.
Memphis, Tenn.

Unfortunately for those poor chaps who try to gather News, and nothing but News, or we might say the Truth and nothing but the Truth, with a few variations in F minor, we have such people living as Sutherland, Wehrung, Gregory and Kay who keep the Mr. Hyde part of their lives so thoroughly covered up that their private doings, other than routine work, remain completely hidden.

However, the secret operatives of the ALPA News, chanting together their motto of "The News Must Go Through," struck out in unplowed ground the other day and finally submitted a confidential report on that heretofore very elusive Mr. Kay.

"Natural" Museum of Arts

Like so many pieces of valuable information, the details of this gruesome affair came to light only by accident. On every cancellation at Newark, the other end of the line, this Mr. Kay hurries over to New York, there to stay until the late hours when he drags himself back to the hotel. Each time he returns he tells all his friends how he has spent his time in the Natural Museum of Arts and other places of educational interest. However, when he began quoting a program at the Planetarium which had been discontinued the month before, the operatives of ALPA got busy and found that he really spends his time in all the burlesque theatres, then buys pamphlets concerning the points of interest, reads them on his way home and is thus fortified to substantiate his claims on where he has been. The only point about the whole scheme he overlooked was to keep his literature up to date.

And there are other reports that one of our supposedly uprighteous citizens has been investigating the burlesque shows in Newark. I'd rather lose an eye or a leg (and probably will) before I'd tell you his name; anyway the ethics of the press keep me from disclosing who it is, but if you'll lean over close I'll tell you his initials are Sweetie Davis.

This business of being cancelled away from home for long periods really has its surprises. I gave my boy (3 years old) an electric train for Christmas and when I finally got home again he had figured out his own automatic block signal system, had built a seaboard division through the bathroom, a trestle over the bathtub and was using that hinged picture frame as a tunnel!!

Missed the Hash

Oh well, the real advantage of being away from home after Christmas is that you miss that long period of turkey hash.

If you look it up in the rule book, you'll find that one positive means of insurance against making one of those one-wheel landings is to drop the old boat in from about ten feet. There's a money-back guarantee that you can't tell which one hits first.

If you want to make a mark in this world for yourself, just taxi off the runways at Bristol. You'll leave a furrow that will go down through the sands of time.

In talking to one of the congressmen the other day he said that Congress was getting ready for war just as fast as it could. Some of the boys have been worried, thinking that they might have to go and fight. That doesn't worry the rest of us. The boys who fly those army planes are Air Corps officers, and down in black and white in Army Regulations it says that an officer is considered to be an officer and gentleman. The officer is all right, but we'd never make that gentleman business.

Teamwork

It is of particular interest to everyone in the air line industry

SOUTH AMERICAN PILOTS PRACTICE "STRIP TEASE" IN LANDING AT TIPUANI

(Continued from Page 6)

to note the close teamwork that's becoming predominant between all the air lines. The job before the industry as a whole is far too great to be handicapped by petty jealousies from within. The dream of all the air lines working together was dreamed by some of the operators years ago but it has taken those same years and many hard knocks to bring that dream into reality. This feeling of unity has been brought about to a great extent by the common, sincere desire for safety in operations. The immedaite byproduct was the voluntary agreements to conservative operations this winter.

The most outstanding point of these new operating policies is the limitation of flying over extended areas of zero-zero conditions. This one policy should be continued just as long as a bimotored airplane is being flown by an air line. It just doesn't make sense to assume that an airplane, in the event of single - engine performance and the subsequent fifty per cent loss of power, can continue on indefinitely with the possible hazard of ice and the necessity of clearing high terrain. Our days of extending flying over doubtful weather below should be after the new four-motored ships are out and fully tested. Then, in the event of engine failure, there is still seventy-five per cent horsepower left which should be ample to combat any difficulties which might arise until arrival at the next station.

Hulett Out on a Limb

It is with extreme pleasure that the Super Snoop Agency has announced why Hulett was so anxious to help McDonald build that new trick boat. It seems that Hulett was out fishing with McDonald one day when their boat heaved a tired sigh, gave up the ghost and started a one-way dive for Davey Jones. Hulett started bailing for all he was worth but it wasn't fast enough so he grabbed hold of an overhanging limb that happened to be there and hung on for dear life. McDonald in the meantime paddled the boat to shore, dumped out the water and paddled back close to the tree but not close enough for a rescue until he had a promise from Hulett about the new boat.

NIGHT OPERATION TULSA-KANSAS CITY ON HANFORD

By PILOT W. D. WARREN
Council No. 45—H. A.
Kansas City, Mo.

At last we "gotter." On January first Hanford received permission and started the first limited night airway operation. Our route from Tulsa to Kansas City lies over ideal terrain and has excellent radio range facilities but is lacking in beacons.

We had to convince a group of Bureau of Air Commerce inspectors from Missouri that, first, we could find our way to Tulsa and return and, second, that we could establish our position along the line of flight by bearings taken on other stations with the rotatable anti-static loop.

The tests were flown by Vern Dorrell, operations manager, and the pilot to be checked was under the hood in the copilot's seat. He directed the pilot as to course to be flown, altitude; filled out the flight log, estimating time over check points and ground speed and cranked the loop, praying that the nulls would not be too wide, and from the bearings established a "fix."

D. O. C. Inspectors Conducted Tests

Inspectors Delany, Douglas, Stephens, Studebaker and Trunk conducted the tests for the Bureau. They would listen in through interphone. One would check the pilot as he was taking a bearing, noting the degrees of the null and the time the "fix" was obtained. The other would check the actual position and, checking the calculations, determine the error. The average error for the group was between five and six miles and on the results of the showing the Bureau granted permission for night operations.

Not much personal news. Seems nearly all are hibernating. Al Jaster is about to become a bachelor, his wife taking off for a vacation in California. Speaking of California, we have recently lost three of our group: Sid Willey, Chris Carper and Leonard Hilton, all of whom shook the snow from their feet and headed for the land of sunshine and flowers.

BUSINESS RUSHING IN LIMA, PERU

By PILOT EARL REDDEN
Council No. 38—P. A. A.-Grace
Lima, Peru

Business has been rushing this summer, our DC3's, DC2's and Aerovias Fords being filled to capacity nearly every trip. They have almost gotten to the point where they write S. O. L. instead of S. P. L. on the free tickets. In addition to the usual summer increase in local passengers, there have been a great number of American tourists making the detour down here because of the troubled waters of the east and west. The majority of them are quite surprised and favorably impressed with this unknown land.

Len Hodge went up to Cristobal to see his folks when they were travelling through there, bound for diverse parts of Central America and the United States.

Pan American Highway

Work on the Pan American Highway is going along nicely, especially in Peru where the existing roads are being improved. But the air traffic has apparently not suffered in the least. Recently some young Argentine fellows went by car—a Model T Ford that is — from Buenos Aires to New York, driving all the way except for some parts by ferry. People are always going by horse, car or bicycle from South America to the United States but nobody ever comes the other way in spite of the general wandering spirit indicated by the growth of the trailer business up there at home.

A more convenient trip by car would be from Talara on the northern border of Peru down to Montevideo and on up to Rio de Janeiro, Brazil. This 4700 mile journey would be less adventurous than the more ambitious one of the Argentines but it would be via more or less well defined road all the way and would certainly be a thorough way to "explore" the country.

We guarantee no head-hunters, lions, tigers, bears, crocodiles nor boa constrictors. It would take about three weeks of continuous driving compared to three or four days by air, so naturally the best and quickest way to see South America is to fly down, on Panagra of course. In Peru there is also Aerovias Peruanas (Peruvian Airways) for local service. Or if we are filled up, there is Faucett Airlines with practically all American pilots and you can go some places with Condor Aviation Company which has all American pilots.

Go Away

If there are any more "Sportsman Pilots" contemplating a flight into South America, let them be forewarned on at least one point. When a military plane of one of these countries flies up to take a look at your unfamiliar craft, don't wave him away. Bob Supple was once flying a commercial transport with a military escort and seeing the two escorts too close in he waved them away. The Latin American pilots promptly moved in closer and when a couple of more urgent waves brought them in still closer Bob could see the whites of their eyes very well indeed. It was a tight spot and the pilots were obviously as disturbed as he until Bob finally solved the dilemma by signalling to break formation. The escorts lost no time in doing so and Bob again breathed freely. Soon afterward he learned that in Latin American countries our "go away" wave means "come here."

Anyone interested in excellent and accurate information on South America should read the latest issues of Fortune Magazine.

Direction Finder Loops

Gordon Gray, our radio operations expert between flights, has been busy devising ways and means for making the most of our direction-finder loops on the Douglasses. The plane loops are Panagra's substitute for the radio beams in the States. We find the plane loops a great improvement over our old type ground station direction finder which took about three minutes to get a bearing which even then was not too accurate. After getting this bearing from the ground station the navigating really began, because it was necessary to add or subtract 180 degrees, subtract variation of from two to ten degrees, and apply compass deviation to get the correct compass course to be flown toward the radio station. Also, the error was considerable when the plane was not flying directly toward the ground loop. The stations used to be very occupied in furnishing sufficient bearings to each of two planes in the same sector and three planes were sometimes together in bad weather, in need of frequent and accurate bearings. With plane loops now, however, the ground station sends out a continuous signal, usually on 1638 kc., and the planes tune in, rotate their respective loops to find minimum signal, each getting practically a continuous bearing. The range of the loop is an unsettled question but appears to be considerably less than 100 miles and there is a signal build - up that serves as a cone of silence when the plane flies directly over the station.

Dinty Moore Makes New Checker Rules

Dinty Moore, that demon on the checker board, was just about put in his place by your scribe who has played lots of checker games in Mendoza, Argentina with the customs men while waiting for the Andes weather to improve. However, Dinty changed the rules, making all men able to jump backward, kings able to move clear across the board in one move and the like. So now nobody has a chance against him.

Undressing Procedure

A real gentleman, Fred Baxter, says, "I had completely forgotten," when you pay him 5 soles long outstanding. But suave as he is, he was picked to help fly freight out of La Paz, Bolivia. Fred Baxter, Bill Denham, Toby Hunt and Jim Motley have found the procedure on that run is to leave LaPaz on chilly days with plenty of clothing and in the course of the 40 minute flights to remove the overcoat at 12,000 feet, the coat at 10,000, sweater at 8,000, and shirt at 4,000, before landing at torrid Tipuani at 2,000 feet, near the edge of the Amazon basin. And vice-versa on the return.

Craig Brown and Freddy Lord came down from Cristobal to Lima to get in their company maintenance training, pass their DC3 exams and get their fill of instrument flying in the Fairchild. Meanwhile Robert B. Hoyt languished in Guayaquil and spent a year there one week. There is excellent fishing around there, but when one asks, "How are they biting?" there is generally no reference to the pescatorial sport. The question is associated with the activities of game little fighters (and biters) agile enough to jump 90 times their own height—fleas.

Pests

Guayaquil, 2 degrees south of the equator, has also been overrun by some tropical member of the locust family and practical Jack Miller has been trying to figure out a way to get rid of the pests. We wish Jack would work out a quick and easy way to get through the Panair correspondence courses.

Now that Walt Gray has no more licenses, courses, nor diplomas to work for, he decided to take it easy. But the habit had him so bad he went after an automobile and drivers license, really no small feat in itself. He found a good buy in the first car he looked at, and bought it. It was a good car but afterwards Walt was sore because he had not had a chance to look around and argue more people down on their cars. Next to technical - minded law graduate Fritz Sterling, nobody likes a good argument more than Walt Gray. And of course Division Supt. Bob Disher, who represented us in the last ALPA conference, belongs in the first catagory also.

Mead Amendments Passed

While everyone was busy watching and waiting for something to happen to the I. C. C. legislation the Mead bill, H. R. 6628, amending the Air Mail Act of 1934, was enacted into law. This bill permits the Postmaster General to extend air mail routes to a maximum of thirty-five thousand route miles and an annual aggregate of fifty-two million airplane miles.

Another Mead bill, H. R. 4732, has passed the House. This bill further amends the Air Mail Act of 1934. Among other things it extends the date within which the I. C. C. must fix air mail rates so that aggregate expenses will come within the postal revenues. The date is changed from July 1, 1938 to July 1, 1940.

If this bill becomes law it will make unnecessary the hearing which is scheduled by the I. C. C. for February 1st. At this hearing the I. C. C. hopes to determine the amount of subsidy, if any, included in air mail payments to the operators with a view to determining what reduction in rates will be necessary on and after July 1, 1938.

P. O. D. Reports Deficit

The most recent report of the Post Office Department shows that for the fiscal year ending June 30, 1937 the excess of mail payments to contractors over the receipts from postage is only slightly in excess of $200,000. However, the Post Office report charges off a considerable amount of its general overhead to the air mail service with the result that the report shows a deficit of $6,737,129. The total cost of the air mail service including the overhead according to the Post Office figures was $19,177,129. Of this amount $12,722,286 was paid to the air carriers. The revenue from air mail postage is given as $12,439,579.

New Rubber Paste De-Icer

Hazardous icing conditions are being combatted by Imperial Airways with a paste of rubbery consistency known as "kilfrost" which is applied to the plane parts where ice would be liable to collect.

Used on a transatlantic experimental flight, one flight captain reported that use of this paste had left a coating sufficient to assure de-icing even after two hours of blinding rain which he had encountered on the journey.

These experiments follow closely recent charges in the British House of Commons that Imperial Airways had no de - icing equipment.

ARE YOU WEARING AN ALPA EMBLEM?

A small number of our members have not as yet purchased their Association emblems. There are but a limited number left at Headquarters. Mail in your 50c today and identify yourself as a member of The Air Line Pilots Association.

NEW DEVICE TO COMBAT AIR DEAFNESS

According to experts on the subject it is an established fact that sudden changes of altitude impair the hearing of pilots who frequently find that changing air pressures affect the middle ear by changing the pressure of the air in that organ. In addition to this there is the noise of the motors, and the constant irritation caused by heavy static in the earphones which the pilot wears for long periods at a time, and through which he receives his weather reports from the ground.

Receive Impulses Through Cheek Bones

To counteract this, Bureau of Air Commerce engineers have devised a system whereby pilots receive sound impulses through the cheekbones or the mastoid bones. In this way the impulses are carried direct to the inner ear without striking the outer ear, the eardrum, or the middle ear. This is similar to the apparatus used by a deaf person and consists of an electrically charged diaphragm attached to the bone structure of the head.

At present the device does not carry the sound in as great volume as is necessary, but the members of the Bureau's staff who are carrying on the experiments believe it will be possible to find more sensitive sounding apparatus. This would not only permit use of the equipment for ordinary flying but would also enable deafened pilots to continue in their profession.

Australia to Fly All First-Class Mail

Within a very few months all first-class mail in Australia will be carried by air according to recent press reports.

Australian National Airways is only three years old, yet today it is flying 10,200 miles daily, operating out of Melbourne and linking the chief cities of the continent, such as Sydney, Brisbane and Perth, as well as operating a 220-mile over-water route to Hobart, Tasmania.

Until the present the company has operated only during the daylight hours, but a lighted airways system is being installed which will permit night flying.

Flying American Built Ships

Six Douglas DC-2 and two DC-3 planes are being used on the main routes in addition to ten smaller ships on feeder lines. Two more DC-3's have been ordered.

Captain C. H. Scott, superintendent of flying for the Australian National Airways recently completed six months of studying American airline operation. He described the development of commercial aviation in the United States as "magnificent."

NewRadioStation On Top Lookout Mountain, Idaho

According to the Bureau of Air Commerce, a full-powered, simultaneous weather broadcast and radio range station has just been commissioned on top of Lookout Mountain, adjacent to Mullan Pass, Idaho. At 6,400 feet above sea level, this station is now supplying directional radio and essential weather information to planes flying the northern transcontinental airway through the pass.

Why-- Forced Landing in the Sahara-- Engine Trouble in Central Asia-- Catastrophe in the Mountains-- Crash in the Utah Mountains?

The Principal Reasons for the Air Mishaps of the Last Few Months.—What Defects Are Responsible.—Perilous Ice.—The Unseen Ground.—The Struggle to Overcome the Defects.

The past few months have held some black days for aviation. And these have brought to the attention of air-minded people the fact that apart from the hitherto acknowledged reasons for accidents —engine failure, constructional defects in the aircraft, and human imperfections of the pilot—there are two other factors which are coming more and more into the foreground. The reason for these is that flying is nowadays carried on in all sorts of weather, by day or by night, regardless of fog or other unfavorable conditions. The two dangerous factors are: invisible or hidden ground, and ice on the wings of the plane.

If we now consider recent accidents — from the catastrophe to the flying boat "Courier" to the forced landing of the French Duchene in the Sahara, the engine trouble of the German Lufthansa plane in Central Asia, the three accidents suffered by Dutch aviation, and finally the tragedy in the mountains of Utah — it appears all of these come under one of the four classes. And by investigating these cases we come to valuable conclusions regarding future lines of development of aviation.

Engine Failure — Engine Trouble —the Crash When Taking Off

Human imperfections of the pilot can only be overcome by the production and employment of a 100% competent and reliable robot, thus making hours of strained attention unnecessary. In this respect Germany has a few surprises up her sleeve. But we will now consider the other problem, that of engine trouble or engine failure. When the Lufthansa machine on its way to Kabul was forced to land near the Lob oasis 30 miles west of Khotan, it was a simple case of engine trouble which could be rectified in an hour and a half. That the stop was for longer period of time was simply due to the fact that the pilot was taken, prisoner. No further blame could be attributed to the engines. Even with the most careful testing of engines and equipment there is always a possibility of such engine trouble or failure arising. The reasons remain a mystery, even to the wisest of experts.

What Is Being Done

Regulations governing examinations for strength and safety are made more strict, new testing appliances are introduced, and greater care exercised in manufacture and assembly. That is all that can be done at present to guard against engine failure.

Very dangerous indeed is the failure of an engine immediately after taking off. The Dutch have reason to remember this. Both of their two serious crashes in October may be traced back to engine failure just after the take-off. The reasons behind this are easily comprehended, by either the technician or the layman. In modern high-speed aircraft the range of speed from top to lowest flying speed is very great, so that taking off is only made possible by using the engines to their utmost capacity and by making full use of the variable pitch airscrew. With both engines developing full power (in a Douglas 2 or 3, for example) and maximum angle on the propellers, there is just sufficient force exerted by the propellors to keep the machine in the air. It must be borne in mind that immediately after taking off, the machine is climbing. If an engine fails at this stage there is an immediate falling off in the power supply. The machine must be brought at once to a lesser angle of climb and speed regained if it is to remain in the air.

But in the case of a twin-engined machine, for example, the failure of one engine involves the production of forces acting about a vertical axis, which may give rise to regions of aerodynamical disturbance, with serious consequences. The pilot's reaction must follow within a fraction of a second if these disturbances are to be counteracted. Furthermore, powerful rudder effect and a machine which is insensitive to these disturbances are requirements in dealing with such accidents. In view of these facts the use of twin-engined machines in commercial aviation may only be continued subject to certain requirements.

Unseen Ground

The ill-fated Imperial Airways flying-boat Courier was one of the 28 Empire flying-boats ordered by Imperial Airways from Messrs. Short Bros. of Rochester at a cost of £40,000 each. Its sister-ship Capricorn came into collision with a mountain side in France. The Courier came to grief through the pilot being unable to judge his height owing to dazzle on the water. The machine struck a rock just under the surface of the water and was wrecked. This accident must be included in the list of air crashes due to "unseen ground"—this new and dangerous cause of catastrophes in aviation which has come to the fore in the last two years. It is easy to evade fog and bad weather by climbing above it. But the danger arises when one is obliged to come down again in search of the ground. Plunging through clouds and fog, a single error in calculating position is sufficient to bring the plane into contact with a mountain side or the ground. And another crash is recorded. Yet the pilot, even when uncertain of his position, cannot remain above the clouds until his petrol is exhausted.

Blind Flying Equipment

The tragic accident which overtook the American air liner in the Utah mountains, with a loss of 19 lives, is an example of the dangers which always threaten when the aircraft's blind-flying equipment is imperfect. For when flying over mountainous country in bad weather the pilot has to rely on the electrical direction-finding indications which are provided for him. If now the machine is equipped with anything but the best of direction-finding apparatus, the pilot may stray out of the wireless beam, or may be misled by faulty reception into confusing one station with another.

So much for the directional factor. As regards height we still have to rely entirely on barometric height indicators, which must often fail in bad weather areas. And an aeroplane in bad weather, flying over mountainous country where strong downward air currents often occur, is sensitive to rudder alterations and atmospheric disturbances. A machine may quickly lose height, but regains it only with difficulty. In such cases of loss of height in the clouds it is easily possible to strike the ground —in the case of the Courier it happened even in broad daylight and in good weather, simply caused by dazzle.

According to Major Turner of London, a Mr. F. D. Aldridge, working in conjunction with the Pollock-Brown Automatic Aircraft Controls Co., has invented an "eye," which uses special valves and ensures the immediate detection of an obstruction—and that with a maximum possible error of 100 feet. It remains to be seen how this "eye" proves itself in practice.

Perilous Ice

Besides weather disturbances and the "unseen ground" there is still the formation of ice on the wings of the plane to reckon with as a cause of mishaps. This factor must also be taken into consideration in the case of the crash in the Utah mountains. In bad weather over mountainous regions ice forms very rapidly and has a decisive influence on the machine's behaviour and performance.

Chemical and mechanical methods are being evolved for preventing ice formation. Chemically, attempts are being made to lower the freezing points so that no ice is formed at all. Or chemical means are sought of removing ice as it forms. Mechanical means include recent experiments in the employment of exhaust gases to keep rubber tubes in motion, thus preventing ice formation. As yet, however, these methods are still in the experimental stage. When a solution is found, aviation will breathe a sigh of relief.

Nevertheless in this, as in other fields of research, there are ardent workers who (in a period of time as yet uncertain) will eliminate forced landings, flying into mountains or unseen obstructions, and errors in height measurement as sources of danger. For ultimately the increase of security is the weightiest factor in the furtherance of aviation throughout the whole world.

(Courtesy Nova-Air-Revue, Geneva, Switzerland.)

PILOT STARK Invents Blind Landing Aid

Experts of the Bureau of Air Commerce are now testing an ingenious adaptation of the standard directional gyro used on all airliners, providing the pilot with an orientated chart which shows the various legs of the radio beacon by which he is making a "blind" landing approach through the fog and the airport's location with respect to them. It was invented by Horace Stark, a Pennsylvania-Central Airlines pilot, ALPA member, and built to the government's order by the Sperry Gyroscope Company of Brooklyn.

Different Chart for Each Terminal

The chart which is circular in form is carried by a disk in a glass-covered case on top of the directional gyro, the main shaft of which is connected to and turns the disk, or rather holds it stationary when the airplane is turned. A different chart has to be used for each air terminal, but these are as easily put in place as a phonograph record, and a "fool-proof" fitting prevents them from going on the disk in any but the proper position.

According to the Bureau of Air Commerce description of the device, "the small, light chart becomes a part of the gyro proper and by being precisely balanced does not interfere with the normal, regular operation of the instrument. In use, the gyroscope is set by reference to the magnetic compass which aligns the north point of the chart with geographical north.

Pilot Has Exact Picture of Radio Beams

"Through the use of the airport orientator and by bringing the flight instruments and the radio compass to central or neutral positions, the pilot has an exact picture of the location of the radio beams, the airway and the airport's position in relation to these. Regardless of the number of times the course or position of the aircraft with relation to the airport is changed, the exact orientated picture is given correctly corresponding with the orientation of objects below the plane.

"The fundamental purpose of the instrument is to relieve the pilot of exacting navigation problems while maneuvering into an airport and, according to Pilot Stark, any maneuver around or at any distance from the airport can be made easily by reference to the orientated chart. This frees the pilot of the necessity of keeping a mental picture of his position constantly in mind."

INTERNATIONAL AIR NEWS

FRANCE:
Michela Dufay, the woman who is head of the Order of the Holy Ghost, has left Paris on a 10,000 mile flight over French Africa and Madagascar, where she intends to visit the various mission stations and hospitals.

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CANADA:
Thirty-two radio signal stations are being provided for transcanadian air lines in order to guarantee safe flight in all weathers.

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GERMANY:
At Friedrichshafen steel tanks have been made, in which the helium for the new airship LZ130 will be transported from America to Europe. It is anticipated that the airship will be completed by the early summer of 1938.

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BRITAIN:
Imperial Airways is at present carrying out experiments with the flying boat Cambria with a view to refuelling in the air. It is emphasized, however, that such refuelling is out of the question for Atlantic flights, preparations for which are going on as heretofore.

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CANADA:
During the last year under review the Canadian Government notes an increase in the Canadian air fleet of 102 machines. The strength on the first of September 1936 was 185 machines.

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FINLAND:
The Aero-Company of Finland has organized its services in such a way that passengers leaving England in the early morning may arrive in the neighborhood of the Arctic Circle 16 hours later. This applies particularly during the period of the midnight sun.

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ENGLAND
More than 100 Royal Air Force pilots will be carried next month by British Airways and Imperial Airways as second pilots on their commercial routes. The reason behind this decision is the fact that so many serious disasters have occurred in the R. A. F. during the past 12 months that the authorities feel the necessity of seeking assistance in reducing them. Most of these accidents occurred when the pilots ran into fog or were flying over unfamiliar territory. Thus the principal objects in view will be to train the pilots in observation, in blind flying, and in finding their way across unfamiliar ground.

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AUSTRALIA:
In the last few years numerous air expeditions have been carried out in Australia for map-correction purposes. One of the most recent was under the leadership of Donald Mackay, and started out from Sydney. Two machines were used—a De Havilland Dragonfly and a Puss Moth. A large number of hitherto poorly-known regions were successfully photographed. Altogether during the last four expeditions no fewer than 600,000 square miles of unknown territory have been registered by photographic means. Already in two instances it has been possible with the use of these maps to organize successfully two rescue expeditions, which presumably could otherwise never have achieved positive results.

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BRAZIL:
From a report of the Vasp Air Transport Company of Brazil we learn that during the period November 1936-November 1937 an interesting record has been set up. Not only was 91 per cent of the available seating accommodation filled; friends of aviation in Brazil can also be assured that the services were maintained with 100 per cent regularity and 100 per cent security. Between Rio de Janeiro and Sao Paulo 12,723 passengers were carried.

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INDIA:
All air transport companies which have direct connections with India or are planning such connections must now give their serious attention to the question of radically disinfecting their machines before these land in India, for the Government of India now requires guarantees that all machines which have passed through any region suspected of harboring yellow fever must be cleared of mosquitoes before landing. Specialists of the Ross Institute in England have been asked to find a satisfactory method as quickly as possible. Hitherto experiments with gases and chemical sprays have proved unsuccessful. Besides the question of mosquitoes the problem has other important aspects. It has been ascertained in British, Australian, American and Dutch laboratories that numerous insects and plants which are relatively innocuous in their native lands, can be very dangerous in other countries.

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ITALY:
The development of Italian civil aviation is illustrated by the statistics of the Ala Littoria for the period of 1936-1937. In the course of 12 months the service has been extended by 5,000 miles and now extends over nearly 19,000 miles. The machines covered 4.9 million miles, carried 87,000 passengers, 528 tons of goods and newspapers together with 378 tons of mails and 1,160 tons of luggage.

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UNITED STATES:
According to a recent U. S. A. survey it appears that in every second of the twenty-four hours, every day, an average of 1,609 persons and 14 tons of mail are carried across the States on the normal air lines.

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CANADA:
The Trans-Canada Air Lines between Vancouver and Seattle are being used to such an extent that a Sunday service has had to be added. Trans-Canada Air Lines recently acquired 3 new Lockheeds. Four more machines can be put on in the spring.

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ENGLAND:
The British Air Ministry has placed a contract for 5 autogiros, to be tried out in England in April or May of this year.

(Courtesy Nova-Air-Revue, Geneva, Switzerland.)

Bob Buck Flies the Mail

Recently employed by T. W. A. is Robert N. Buck, one of aviation's precocious children. At the age of 16 Pilot Buck set a new junior record from Newark to Los Angeles; he had been flying for just nine months. At 12 he had started building model planes; at 15, he and a friend had built and flown a real glider. He was even responsible for his mother learning to fly. Flying the mail and passengers on an airliner has always been Buck's goal and now he has reached it.